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BRIEFING PAPER 2

THE DETERMINANTS OF STANDING AND SEATED FOOTBALL ATTENDANCES: EVIDENCE FROM THREE SCOTTISH LEAGUE CLUBS

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1. Introduction

The purpose of this paper is to investigate the determinants of the demand for Scottish Premier League football using regression analysis, differentiating between the determinants of standing and seated attendances.

Previous studies of the determinants of football attendance (Bird, 1982; Jennett, 1984; Cairns, 1983, 1987; Peel and Thomas, 1988) have concentrated exclusively on the determinants of aggregate attendance. Such studies therefore do not allow for the fact that the majority of football clubs which provide a choice between seated or standing accommodation effectively supply two quite distinct 'products'. These products differ in terms of both their price and their characteristics (for example, the standard of comfort, the quality of the view, the degree of protection from the weather, and the type of match atmosphere experienced in each). They are also likely to appeal to different categories of supporter (for example by age, sex, or socio-economic background, with young working class males generally more likely to stand on the terraces, and spectators in other groups more likely to choose seats).

The need to identify separate demand functions for different types of viewing accommodation is of particular importance given the likelihood that the trend towards the introduction of all-seater stadia by major clubs will gather pace during the 1990s. The Lord Justice Taylor Report conducted in the aftermath of the Hillsborough disaster in 1989 recommended that all stadia staging fixtures in the Premier Division of the Scottish Football League and in the 1st and 2nd Divisions of the Football League in England and Wales should be converted to offer seated accommodation only by the start of the 1994-95 season. Other league stadia should be converted by the start of the 1999-2000 season (Taylor, 1990). Taylor identified improved comfort and safety, easier crowd control and easier identification of ticket forgeries among the advantages of all-seater stadia. Critics point to violation of tradition and loss of terrace camaraderie, and the reduction of ground capacities and higher admission prices likely to result from the removal of standing accommodation.

If spectators in the all-seater stadia of the future can be

expected to behave in patterns similar to those of seated spectators in the mixed accommodation stadia of today (a supposition which depends on the extent to which changes in factors such as cost and match atmosphere alienate terrace spectators and encourage more spectators of the type who currently choose to sit), an investigation of the differences between patterns of behaviour of seated and standing supporters today may have significant implications for clubs currently planning their response to the Taylor recommendations.

2. The determinants of football attendance: theory and data

Published attendance data for matches in the Scottish Football League is only available in aggregate form (for seated and standing supporters combined). In order to obtain disaggregated data, we sent a postal questionnaire to all clubs which competed in the Premier Division of the Scottish Football League during the seasons 1987-88 and/or 1988-89, with the single exception of Aberdeen whose stadium is currently all-seater, implying that comparisons between different types of accommodation are not possible in this case. The questionnaire requested a breakdown of each club's attendances at home Premier League matches into separate totals for seated and standing accommodation.

Of the 12 clubs contacted, only 3, Falkirk, Hamilton Academical and Hibernian, were able to provide a positive response. Among the remainder, a majority indicated that they did not collect or retain any breakdown of their aggregate attendance figures. The data set available to us was therefore rather smaller than we would have preferred, and the results quoted in the next section must obviously be interpreted in the light of this limitation. Between them, the 3 respondents provided a total of 4 complete sets of seasonal attendance data: Falkirk played in the Premier League in 1987-88; Hamilton did so in 1988-89; while Hibernian were Premier League members in both seasons. As both Falkirk and Hamilton were relegated at the end of the respective seasons for which they provided data, there is inevitably some bias towards the lower end of the Premier League table in the selection of clubs.

Data was collected on a number of explanatory variables as follows. Firstly, DIST represents the distance in miles

between the grounds of the clubs playing in each fixture. This variable allows for the likelihood that 'derby' matches between clubs from nearby towns tend to attract higher attendances, while attendances at matches between clubs situated at long distances from each other may suffer both due to lack of local interest, and the economic, practical and psychological disincentives for visiting supporters to travel long distances. A priori, there is probably no reason to expect that the 'derby' effect should differ between the two types of accommodation. On the other hand, the 'long distance' effect might be expected to be greater on the terraces than in the seats. At most grounds, the proportion of visiting supporters who stand is greater than the proportion of total spectators who stand. This is partly because standing supporters are generally more likely than seated supporters to travel; the latter include a higher proportion of older spectators and family groups who are unlikely to attend away matches. Therefore we might expect standing attendances to be more sensitive to the 'long distance' effect than seated attendances, due to variations in the level of visiting support.

Several series of meteorological data were collected in order to incorporate the effect of the weather on attendances, including the average temperature, the number of hours of sunshine and the amount of rainfall on the day of the match. Only the latter was found to be statistically significant in any of the estimations. RAIN, the amount of rainfall in millimetres between 0900 on the morning of the match and 0900 the next day at the weather station nearest to each ground, is therefore the only meteorological variable included in the final model. Because at most clubs terracing is generally more exposed to the elements than seated accommodation, we might expect standing attendances to be more sensitive to adverse weather conditions than seated.

Data on the past and current performance of the clubs involved in each match was also included in the estimations. LWIN measures the number of occasions on which the visiting club has won the Scottish league championship since the Second World War, and is included primarily to allow for the 'big match' effect of visits from the two most successful clubs, Celtic and Rangers, and, to a smaller extent, of visits from other clubs with past championship success such as Aberdeen and Hearts. Between the end of the Second World War and the 1986-87 season, Celtic achieved 15 championship wins, Rangers achieved 14, while the next highest was Aberdeen with 4.

POSA measures the current league position of the visiting team, and allows for the attractiveness of a visit from a team which is currently successful (regardless of historical success). A similar variable measuring the current position of the home team did not prove to be statistically significant, primarily because there tended to be very little variation in league positions of each club in the sample beyond the first few weeks of each season. We also attempted to allow for the effect of the recent

form of the home team by including a variable measuring the number of championship points gained from recent home matches. However, this variable was also statistically insignificant in all estimations, so it was excluded from the final model.

3. Estimations and results

The model which was estimated for the attendance (ATT) in each type of accommodation was as follows:

$$ATT = \beta_0 + \beta_1 DIST + \beta_2 RAIN + \beta_3 LWIN + \beta_4 POSA$$

The estimated regression coefficients can be interpreted as indicating the effect on attendance of a unit increase in the explanatory variable concerned. For example, β_1 represents the effect on attendance of a one mile increase in the distance between the two clubs. From the discussion in the previous section, we would expect β_1 to take a negative value. Likewise, we would expect $\beta_2 < 0$, $\beta_3 > 0$ and $\beta_4 < 0$.

The estimation results are shown in Table 1. In general the signs of the estimated coefficients are in accordance with expectations; the results for each individual explanatory variable are discussed in the next section. Table 2 shows elasticities calculated from those coefficients shown in Table 1 which are statistically significant.¹ The elasticities show the percentage change in attendance caused by a 1% increase in the relevant explanatory variable. The elasticities allow direct comparisons to be made between the effects of changes in the explanatory variables on standing and seated attendances.²

4. Conclusions

A number of conclusions can be drawn from these results concerning the impact of the explanatory variables on football attendances. Firstly, the geographical distance between the grounds of the two clubs (DIST) is shown to be a strongly significant determinant of standing attendances, with the estimated coefficients statistically significant in all four cases. The evidence for seated attendances is less conclusive, as the estimated coefficients are statistically significant in only two of the four cases. The elasticities are numerically greater for standing attendances than for seated attendances throughout, indicating that the former show greater variability with respect to distance than the latter.

Secondly, evidence that meteorological conditions affect attendance is rather limited. The amount of rainfall (RAIN) is statistically significant in only two of the eight estimations; therefore there is only weak evidence that attendances are affected by adverse weather conditions. There is no evidence to suggest that the impact differs between standing and seated attendances.

Thirdly, the number of league wins achieved by the

visiting team (LWIN) is a statistically significant determinant of attendance in all eight estimations, a result which no doubt partly reflects the impact of visits from the 'big' clubs, Celtic and Rangers on the attendances of the clubs included in the survey. In three of the four cases, the elasticity is substantially greater for standing than for seated spectators. In the only case for which this is not so (Hibernian 1987-88) the difference is marginal; therefore the balance of evidence suggests that standing attendances vary more with the past record of the visiting team than seated attendances.

Fourthly, the current league position of the visiting team (POSA) is statistically significant in five of the eight estimations, but only at the 10% level in two cases. This suggests that overall, the recent form of the visiting team is a rather less important determinant of attendance than the visitors' historical record (reflected in the variable LWIN). As with DIST and LWIN, the balance of the evidence revealed by the elasticities suggests that the effect may be greater for standing than for seated spectators.

Overall, the R^2 values indicate that the chosen explanatory variables are able to explain between 58% and 91% of the variation in the attendance data used in the study. The variables which have the strongest effect on attendances are the distances between the two clubs, and the level of historical success achieved by the visitors. Generally, the impact of both of these variables appears to be greater for standing than for seated attendance figures.

The importance of these results for clubs planning to convert their stadia to all-seated accommodation in accordance with the Taylor recommendations depends largely upon the extent to which such conversions change the composition of the support which clubs are able to attract. If clubs with all-seater stadia tend to attract a higher proportion than at present of the type of spectators who currently occupy seats, then attendance figures may be expected to vary less from match to match than is the case at present. On the other hand, if spectators who currently stand simply switch to the seats, then aggregate attendances may continue to exhibit patterns similar to those experienced at present.

To a certain extent, the choice between these outcomes may well rest with the clubs themselves. Clubs which adopt moderate pricing policies for seats so as not to deter existing terrace spectators from attending for reasons of cost, and clubs which decide to remain in their existing locations, often in central and densely populated neighbourhoods, seem likely to be able to retain a higher proportion of their traditional support. Alternatively, clubs which increase admission prices substantially, or clubs which relocate to out-of-town sites which may be more accessible by car but less so by other means, may find that the composition of their support changes significantly. At present, many clubs at all levels of the Scottish league seem to be genuinely unsure as to which

of these strategies they should adopt. The only prediction which does seem certain is that the choices which are currently being made will have a decisive impact on the nature of professional football as a spectator sport in Scotland for many years or decades to come.

Notes

1. All elasticities shown in Table 2 are calculated at the mean values of each of the explanatory variables.
2. Direct comparisons between the effects of the explanatory variables on standing and seated attendances cannot be made using the coefficients shown in Table 1, because for all of the clubs included in the survey, standing attendances are much larger than seated attendances. Therefore the absolute effects of changes in the explanatory variables are also generally much larger for the former than for the latter, making direct comparisons between the absolute effects relatively meaningless.

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TABLE 1 ESTIMATED REGRESSION COEFFICIENTS FOR STANDING AND SEATED ATTENDANCES

	β_0	β_1 (DIST)	β_2 (RAIN)	β_3 (LWIN)	β_4 (POSA)	R ²
<u>Hibernian 1987-88</u>						
Standing	14985.7*	-47.5*	-193.8 ⁺	331.8*	-745.9*	0.74
Seated	4046.5*	-12.8*	-18.7	121.9*	-195.4*	0.75
<u>Hibernian 1988-89</u>						
Standing	14782.0*	-97.3*	-31.9	705.1*	-505.1 ⁺	0.76
Seated	4259.4*	-12.6*	-72.7	131.7*	-90.3	0.68
<u>Falkirk 1987-88</u>						
Standing	5842.0*	-26.2*	-62.5	432.6*	-216.0 ⁺	0.80
Seated	1665.8*	-1.0	-14.5 ⁺	49.6*	-45.7*	0.83
<u>Hamilton 1988-89</u>						
Standing	3701.8*	-21.0*	53.0	345.1*	-122.1	0.91
Seated	848.4*	-1.0	11.3	38.7*	-25.0	0.58

Notes:

- * indicates that the coefficient is statistically significant at the 5% level.
- + indicates that the coefficient is statistically significant at the 10% level.

TABLE 2 ELASTICITIES OF ATTENDANCE WITH RESPECT TO THE EXPLANATORY VARIABLES

	DIST	RAIN	LWIN	POSA
<u>Hibernian 1987-88</u>				
Standing	-0.25	-0.06	0.13	-0.49
Seated	-0.23	-	0.16	-0.44
<u>Hibernian 1988-89</u>				
Standing	-0.49	-	0.29	-0.23
Seated	-0.18	-	0.15	-
<u>Falkirk 1987-88</u>				
Standing	-0.21	-	0.31	-0.22
Seated	-	-0.02	0.12	-0.15
<u>Hamilton 1988-89</u>				
Standing	-0.26	-	0.41	-
Seated	-	-	0.16	-

Note:

- indicates that the regression coefficient was statistically insignificant, so no elasticity has been calculated.